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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/823,992	04/03/2001	Martin Green	GRE001	6426

7590 12/18/2003

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EXAMINER

SOUW, BERNARD E

ART UNIT	PAPER NUMBER
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2881

DATE MAILED: 12/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

A2

Office Action Summary	Application No.	Applicant(s)	
	09/823,992	GREEN ET AL.	
	Examiner	Art Unit	
	Bernard E Souw	2881	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 35-77 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 35-77 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Applicant's Response

1. Applicant's response filed on 10/09/2003, in response to the first Office Action mailed 07/10/2003, has been entered. The present Office Action is made with all the suggested arguments being fully considered. .

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 35-77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yano et al. (USPAT # 5,747,800) in view of Gregory et al. (WO 98/50941) and further in view of general knowledge in the art.

3. Regarding claims 35, 54, 55 and 77, Yano et al. disclose a mass spectrometer comprising:

- an ion source 1, as shown in Fig.1(a) and recited in Col.3/II.1-8;
- a lens (3,4,5) downstream of the ion source 1, wherein in a first high sensitivity mode of operation the lens (3,4,5) focuses a beam of ions 2, as shown in Fig.1(b) and recited in Col.4/II.43-45, and in a second low sensitivity mode of operation the lens substantially defocuses the beam of ions 2, as shown in Fig.1(c) and recited in Col.4/II.45-47;

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- a mass analyzer (8,9,10,11) as shown in Fig.1(a) and recited in Col.3/ll.18-33, the mass analyzer comprising an ion detector 12 shown in Fig.1(a), as recited in Col.4/ll.8-14; and
- control means arranged to switch the lens (3,4,5) from the first high sensitivity mode shown in Fig.1(b) to the second low sensitivity mode shown in Fig.1(c) upon determining that particular mass peaks in a mass spectrum are saturating or approaching saturation and mass peaks within a particular mass range in a mass spectrum are saturating or approaching saturation, as shown in Fig.2 and recited in Col.4/ll.66-67 & Col.5/ll.1-37.

Although the limitation that a *"particular mass peaks in a mass spectrum are saturating or approaching saturation and mass peaks within a particular mass range in a mass spectrum are saturating or approaching saturation"* is not specifically recited with the exact wording in Yano's, the condition is well known in the art, as indicated by Gregory et al. in the Abstract regarding the purpose of *"extending the dynamic measurement range of the spectrometer relative to that of the detector"* recited in lines 2-3, which is understood by one of ordinary skill in the art as being the same as the last limitation of claim 35 recited above, which can be achieved by *"modifying the ion beam before it enters the mass analyzer"* as recited in line 8, which is understood by one of ordinary skill in the art as being the same as adjusting the lens to defocus the ion beam as recited in the present claim.

► Claim 54 is a method claim reciting the same limitations as the above rejected device claim 35.

► Claim 55 is a device claim reciting essentially the same limitations as the above rejected claim 35, wherein the limitation of regularly switching back and forth between the first high sensitivity mode and the second low sensitivity mode is a mere matter of design choice that does not alter the functional conditions of the device or method, and furthermore, involves only routine skill in the art, and is therefore unpatentable.

► Claim 77 is a method claim reciting the same limitations as the above rejected device claim 55.

4. Regarding claims 37-39, and 57-59, Yano's electrostatic lens system (3,4,5) is a z-focusing lens, which is an Einzel lens comprising a front 3, intermediate 4, and rear electrode 5, with voltages applied to each of them, including specific voltages being applied to the middle electrode (Yano's lens 4) for the high and low sensitive modes, as recited by Yano in Col.4/ll.15-24.

5. Regarding claim 36 and 56, the addition of a y-focusing lens to simplify the defocusing step is conventional and well known in the art, since for that purpose only one direction perpendicular to z (optics axis) and another direction parallel to the spectrometer slit (y-axis) are involved.

6. Regarding claims 40, 41, 60 and 61, the recitations of a power supply capable of specific voltages and the type of the lens (3,4,5) is inherent in Yano's, since the lens **must** be supplied with appropriate voltages from a power supply.

7. Regarding claims 42-44 and 62- 65, the focusing conditions for the ion beam in the high and low sensitivity modes are depicted by Yano et al. in Fig.1(b) and Fig1(c) respectively, as already recited above, whereas the specific percentages of the ion beams transmitted by the spectrometer entrance slit 7 in each of the sensitivity modes are already inherent in Yano's.

8. Regarding claims 45 and 66, an at least 10x difference in sensitivity between the high and low sensitivity modes is a mere matter of design choice which does not affect the functioning of the device or method, and furthermore, involves only routine skill in the art, and is therefore unpatentable.

9. Regarding claims 46, 48, 67 and 69, Yano's ion source 1 in Fig.1(a) is a continuous ion source, specifically coupled to a gas chromatograph, as recited in Col.3/ll.8-17.

10. Regarding claims 47, 49, 68 and 70, the recited types of ions sources are obvious variations of the ion source type already rejected in claims 46, 48, 67 and 69 above.

11. Regarding claims 50 and 71, Yano's ion source shown in the embodiment of Fig.4 is coupled to a liquid chromatograph, as recited in Col.6/ll.3-6.

12. Regarding claims 51 and 72, Yano's mass analyzer or spectrometer comprises a Time to Digital Converter, which is inherent in the data processing device 44 shown in Fig.1(a) and recited in Col.4/ll.12-15.

13. Regarding claims 52 and 73, Yano's mass spectrometer is a quadrupole mass analyzer, as recited in Col.3/ll.18-23.

14. Regarding claims 74 and 75, the amount of time the spectrometer spends in the low and high sensitivity modes is not critical for the functioning of the device or method, and is therefore a mere matter of design choice involving only routine skill in the art. Claims 74 and 75 are therefore unpatentable.

15. Regarding claim 76, the limitation that the lens is arranged to switch between at least three different sensitivity modes is not critical for the functioning of the device, and is therefore a mere matter of design choice involving only routine skill in the art, and hence, unpatentable.

16. Regarding claim 53, the limitation that that the particular mass range of claim 35 includes a range having the specified mass to charge ratios, is again a mere matter of design choice involving only routine skill in the art, and hence, unpatentable.

Response to Applicant's Arguments

17. Applicant's arguments filed 10/09/2003 have been fully considered but they are not persuasive. The following is the Examiner's response to Applicant's arguments:

► Applicant's argument does not specifically point out, which claim limitation is not taught by Yano et al. The examiner maintains that claims 35, 54, 55 and 77 are rendered obvious by Yano et al. as modified by Gregory et al., as follows.

► As recited in the previous Office Action, Yano et al. specifically recite the limitation of claims 35, 54, 55 and 77, in particular:

- a lens (3,4,5) downstream of the ion source 1, wherein in a first high sensitivity mode of operation the lens (3,4,5) focuses a beam of ions 2, as shown in Fig.1(b) and recited in Col.4/ll.43-45, and in a second low sensitivity mode of operation the lens substantially defocuses the beam of ions 2, as shown in Fig.1(c) and recited in Col.4/ll.45-47; and
- control means arranged to switch the lens (3,4,5) from the first high sensitivity mode shown in Fig.1(b) to the second low sensitivity mode shown in Fig.1(c).

Yano et al. do not specifically recite the exact wordings of Applicant's claim limitation, i.e., "*particular mass peaks in a mass spectrum are saturating or approaching saturation and mass peaks within a particular mass range in a mass spectrum are saturating or approaching saturation*". This limitation is taught by Gregory et al., as recited in the Abstract, i.e., regarding the purpose of "*extending the dynamic measurement range of the spectrometer relative to that of the detector*" recited in lines 2-3, which is understood by one of ordinary skill in the art as being the same as the last limitation of claim 35 recited above, which can be achieved by "*modifying the ion beam*

before it enters the mass analyzer" as recited in line 8, which is understood by one of ordinary skill in the art as being the same as adjusting the lens to defocus the ion beam as recited in the present claim.

Thus, Applicant's claims 35, 54, 55 and 77 are rendered obvious by a combination of Yano's teaching with Gregory's. In this regard, applicant's arguments are directed against the references individually. It is to be emphasized that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

► Applicant's specific method of *"defocusing the ion lens"* is already within the working range of Gregory's means of *"modifying the ion beam before it enters the mass analyzer"* with the purpose of *"extending the dynamic measurement range of the spectrometer relative to that of the detector"*.

► Applicant's specific limitation of *controlling the amount of ions to an analyzer by switching the lens from the high sensitivity mode (focusing condition) to the low sensitivity mode (defocusing condition) based on the relative mass peaks in the recorded mass spectrum* is nothing else than Gregory's means of *"extending the dynamic measurement range of the spectrometer relative to that of the detector"*, whereby the use of the (recorded) mass spectrum is inherent in Gregory's, since otherwise it is not possible for Gregory to know whether or not the dynamic range has been satisfactorily extended.

Final Rejection

18. No new ground(s) of rejection is presented in this Office Action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bernard E Souw whose telephone number is 703 305 0149. The examiner can normally be reached on Monday thru Friday, 9:00 am to 5:00 pm..

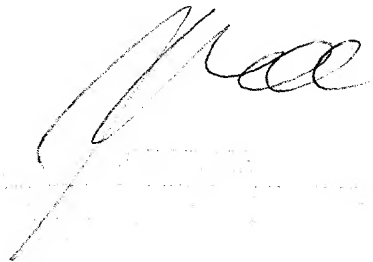
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R Lee can be reached on 703 308 4116. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872 9318 for regular communications and 703 872 9319 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0956.

bes
December 12, 2003

A handwritten signature in cursive script, appearing to read "Mae", is written over a faint, dotted rectangular box.